

CLAIMS

1. A DC motor having magnets as a main source for generating a magnetic flux and armature coils as a main source for generating a torque and using either thereof as a rotor,

wherein the armature coil comprises:

an inner coil group formed by arranging, parallel with each other, a prescribed number of hollow inner coil bodies of a prescribed shape wound with a conductor of a prescribed number of turns on peripheral side surfaces of a virtual disc or a disc-shaped core; and

an outer coil group formed by arranging, parallel with each other, a prescribed number of hollow outer coil bodies of a prescribed shape wound with a conductor of a prescribed number of turns on peripheral side surfaces with the inner coil group taken as a virtual disc while covering the inner coil group.

2. The DC motor according to claim 1, wherein the peripheral side surface of the inner coil group is made externally flush with the peripheral side surface of the outer coil group.

3. The DC motor according to claim 1 or 2, wherein the respective inner coil bodies and the respective coil bodies are formed into a hollow and roughly trapezoidal or a hollow and arrowed shape, each of the corresponding inner coil bodies is arranged at intervals of 120 degrees, and wherein each of the corresponding outer coil bodies is shifted from each of the corresponding coil bodies by 60 degrees and arranged at intervals of 120 degrees.

4. The DC motor according to any one of claims 1 to 3, wherein phases facing between the inner coil bodies and the outer coil bodies are connected in series or in parallel to each other, each of which is star-connected.

5. The DC motor according to any one of claims 1 to 4, wherein, in a case where the armature coil portion is made to serve as a rotor, the DC motor

includes commutators adaptable to the respective inner coil bodies and the respective outer coil bodies and four brushes arranged at intervals of 90 degrees for the respective commutators.

6. The DC motor according to any one of claims 1 to 4, wherein, in a case where the armature coil portion is made to serve as a rotor, the DC motor includes commutators adaptable to respective coil bodies formed by star-connecting the respective inner coil bodies and the respective outer coil bodies and two brushes arranged at intervals of 90 degrees for the respective commutators.